



## **Arizona / California Combined Crop Analysis**

# **2019 Desert Durum® Crop Quality Report**

# 2019 Desert Durum® Crop Quality Report

## Desert Durum®

Desert Durum® is a registered certification mark owned by the Arizona Grain Research and Promotion Council and the California Wheat Commission, which authorize the use of the mark only to designate durum grain produced under irrigation in the desert valleys and lowlands of Arizona and California.

Desert Durum® can be produced and delivered “identity preserved” to domestic and export markets, which allows customers to purchase grain of varieties possessing quality traits specific to their needs. Annual production requirements can be pre-contracted with grain merchandisers ahead of the fall-winter planting season for harvest in late May-early July. Varietal identity is maintained by experienced growers planting certified seed and merchandisers who store and ship according to customers’ preferred delivery schedules.

Desert Durum® production acreage in 2019 was higher compared to 2018. According to USDA, yields were 3.21 tons/acre, and quality was uniformly good. In California, varieties Tiburon and Desert King HP accounted for ~32% and 26%, respectively, of all durum planted acreage in California.

Desert Durum® samples were either collected by an FGIS-licensed inspection agency or submitted by handlers to a licensed agency. In 2019, the average grade is No. 1 Hard Amber Durum (HAD). Test weight average was 63.0 lbs/bu (82.0 kg/hl). The average vitreous kernel content (HVAC) is 98.2%, a high average typical of Desert Durum®. Average damaged kernels are 0.1% and total defects are 0.7%. Desert Durum® is characterized by its kernel low moisture content, and this year’s average was 6.8%. Protein content average was 13.8% (12% M.B.)

Desert Durum® quality performance is analyzed at the California Wheat Commission Laboratory. 2019 durum wheat samples were milled on a Modified Chopin CD2 mill. Extraction rates are calculated against total products on an “as is” moisture basis. A correction factor was used to adjust Lab Mill Extraction (%) and Semolina Extraction (%).

### Summary

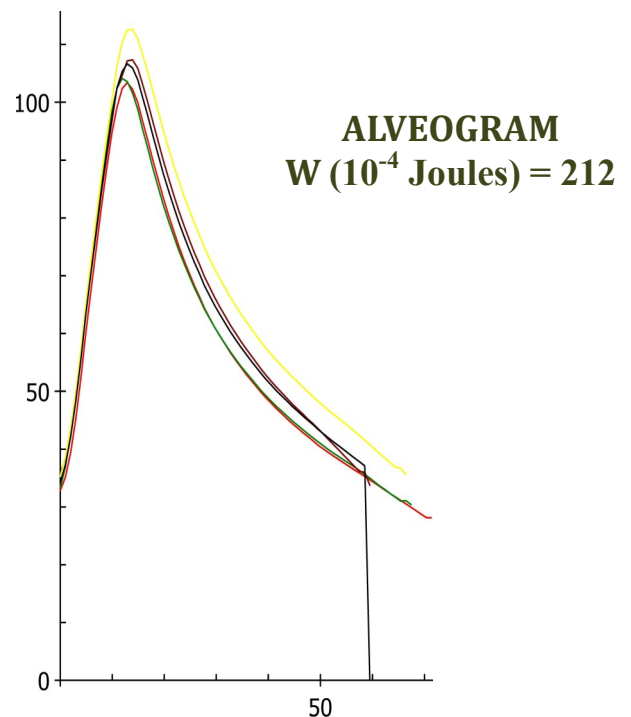
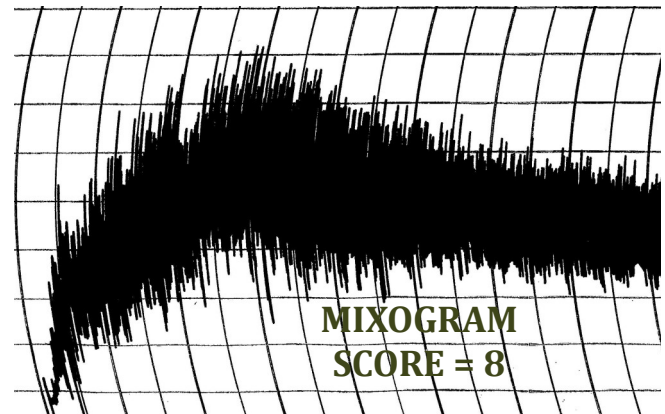
The semolina b\* value was 29.2, similar to 2018 b\* value of 30.5. Wet gluten of 34.7% and gluten index of 70. Semolina Mixograph score was 8 and Alveograph W value was 212 (10<sup>-4</sup> Joules), both of which indicates high strength. Pasta color b\* value was 41 and score was 8.9. Pasta cooked firmness was 6.8 similar to 2018.

New crop grain still exhibits consistently large kernels and low moisture traits that contribute to efficient transportation costs and high extraction rates. The 2019 Desert Durum crop will deliver the valuable milling, semolina, and pasta quality traits that customers have learned to expect and appreciate.

## DESERT DURUM® PRODUCTION

YEAR	METRIC TONS		
	Arizona	California	Total
2019	130,000	60,782	190,782*
2018	136,984	43,090	180,074
2017	230,000	35,850	265,850
2016	313,600	66,908	380,508
2015	384,832	166,778	551,610
2014	229,593	45,260	274,853
2013	205,425	86,682	292,107

\*California Wheat Commission estimate; final data available December 2019 from USDA.



# 2019 Desert Durum® Crop Quality Report

## 2019 DESERT DURUM® VARIETIES

	Alberto		Desert King		Powell	
WHEAT	2019	2018	2019	2018	2019	2018
Protein (12% MB)	13.4	14.0	13.8	12.8	13.4	13.1
Ash (14% MB)	1.77	1.64	1.77	1.72	1.72	1.58
Moisture	7.0	6.8	7.2	6.8	7.9	5.7
Falling Number (sec)	468	909	511	479	516	924
Micro Sedimentation (CC)	60	65	63	62	65	58
<b>Test Weight</b>						
lb/bu	62.4	61.7	62.5	63.2	64.3	63.6
kg/hl	81.2	80.3	81.4	82.3	83.7	82.8
1000 Kernel Weight (g)	51.0	44.1	47.4	44.7	50.3	54.6
<b>Kernel Size Distribution</b>						
Large/Medium/Small	92/8/0	91/9/0	86/13/1	88/12/0	97/3/0	97/3/0
<b>SEMOLINA</b>						
Lab Mill Extraction (%)	79.4	76.0	79.8	76.3	79.3	75.4
Semolina Extraction (%)	72.4	70.6	73.5	71.6	71.7	70.3
Protein (14% MB)	12.4	12.7	12.6	11.7	12.5	11.9
Ash (14% MB)	0.87	0.84	0.90	0.90	0.92	0.77
Specks (no/10 sp in)	14	20	25	26	22	19
Wet Gluten (14% MB)	33.5	31.1	34.8	29.2	34.7	32.3
Gluten Index	89.8	86.5	52.8	71.0	67.5	55.9
Color b*	31.3	32.0	26.5	28.1	30.0	31.3
<b>MIXOGRAPH</b>						
Absorption (%)	62.2	62.6	62.5	61.2	62.3	61.4
Peak Time (min)	3.4	3.0	3.0	3.3	2.8	2.8
Peak Height (mu)	5.7	6.5	4.7	4.6	5.8	5.8
MT Score (1-8)	7	8	6	7	6	6
<b>ALVEOGRAPH</b>						
P (mm)	75	91	99	82	87	91
L (mm)	86	92	36	65	51	71
P/L Ratio	0.8	1.0	2.8	1.3	1.8	1.3
W (10 <sup>-4</sup> Joules)	209	265	153	168	155	195
<b>PASTA</b>						
Color L*	57.9	56.5	55.5	57.5	57.0	56.6
Color b*	40.5	44.3	39.1	41.5	41.7	43.0
Color Score	9.0	10.0	8.0	9.5	9.5	10.0
Cooked Weight (gm)	30.6	28.9	30.0	30.1	29.1	29.9
Cooking Loss (%)	5.9	5.3	5.4	5.4	5.0	5.1
Cooked Firmness (g cm)	6.6	7.3	6.5	6.2	6.9	6.9

Pasta and semolina color - Minolta Chromameter Model CR-200. Weather, soils, and cultural practices can influence the quality of all varieties between years and of particular lots of any one variety. Wheat and semolina protein - Leco Combustion Nitrogen Analyzer Model TruSpec. 2019 durum wheat samples were milled on a Modified Chopin CD2 mill. Extraction rates are calculated against total products on an "as is" moisture basis. A correction factor was used to adjust Lab Mill Extraction (%) and Semolina Extraction (%) for 2019.

# 2019 Desert Durum® Crop Quality Report

## 2019 DESERT DURUM® VARIETIES

	Tiburon		WB Mohave		Westmore HP	
WHEAT	2019	2018	2019	2018	2019	2018
Protein (12% MB)	13.5	13.6	13.9	14.0	15.1	14.3
Ash (14% MB)	1.80	1.75	1.76	1.76	1.56	1.69
Moisture	7.6	6.8	6.7	6.3	7.0	5.9
Falling Number (sec)	691	604	945	988	665	809
Micro Sedimentation (CC)	58	59	58	68	63	66
<b>Test Weight</b>						
lb/bu	62.1	62.6	62.7	62.4	61.6	60.8
kg/hl	80.9	81.5	81.7	81.3	80.2	79.2
1000 Kernel Weight (g)	52.6	52.6	45.0	47.9	41.2	42.2
<b>Kernel Size Distribution</b>						
Large/Medium/Small	97/3/0	97/3/0	89/11/0	91/9/0	83/17/0	80/20/0
<b>SEMOLINA</b>						
Lab Mill Extraction (%)	79.0	77.1	80.1	76.9	78.7	75.4
Semolina Extraction (%)	72.1	72.2	71.1	71.1	69.2	69.5
Protein (14% MB)	12.8	12.4	12.8	13.1	13.7	12.9
Ash (14% MB)	0.88	0.73	0.91	0.84	0.80	0.81
Specks (no/10 sp in)	14	23	20	20	11	17
Wet Gluten (14% MB)	34.3	31.4	34.3	33.1	37.8	34.6
Gluten Index	70.2	75.9	77.2	84.6	67.9	64.4
Color b*	29.0	30.7	29.8	31.0	29.2	31.1
<b>MIXOGRAPH</b>						
Absorption (%)	62.8	62.1	62.8	63.2	64.2	63.6
Peak Time (min)	3.0	3.5	3.4	4.0	2.8	3.0
Peak Height (mu)	5.2	5.4	5.6	5.9	5.8	5.5
MT Score (1-8)	8	8	8	8	7	7
<b>ALVEOGRAPH</b>						
P (mm)	95	104	118	138	127	126
L (mm)	63	69	61	48	47	42
P/L Ratio	1.5	1.5	1.9	2.9	2.8	3.0
W (10 <sup>-4</sup> Joules)	215	237	270	260	241	208
<b>PASTA</b>						
Color L*	57.1	54.7	56.3	56.2	57.3	55.3
Color b*	41.4	42.2	41.7	44.9	42.3	43.9
Color Score	9.5	9.0	9.0	10.0	9.5	9.5
Cooked Weight (gm)	28.6	30.1	29.7	29.9	28.3	29.1
Cooking Loss (%)	5.4	5.1	5.2	5.3	5.5	5.3
Cooked Firmness (g cm)	7.2	6.4	6.6	7.3	7.3	7.5

Pasta and semolina color - Minolta Chromameter Model CR-200. Weather, soils, and cultural practices can influence the quality of all varieties between years and of particular lots of any one variety. Wheat and semolina protein - Leco Combustion Nitrogen Analyzer Model TruSpec. 2019 durum wheat samples were milled on a Modified Chopin CD2 mill. Extraction rates are calculated against total products on an "as is" moisture basis. A correction factor was used to adjust Lab Mill Extraction (%) and Semolina Extraction (%) for 2019.

# 2019 Desert Durum® Crop Quality Report

## DESERT DURUM® AVERAGE GRADE RESULTS

	Harvest data			Export Cargo data		
	2019	2018	2017	18/19	17/18	16/17
Protein (12% MB)	13.8	13.5	13.5	13.82	13.5	13.3
Graded No. 1 (%)	Over 90% of samples graded No.1			100	100	100
HVAC (%)	98.2	98.0	97.6	96.1	95.9	94.2
Test Weight: lb/bu	63.0	62.8	62.2	62.3	62.4	62.2
kg/hl	82.0	81.8	81.0	81.1	82.3	81.0
Moisture (%)	6.8	6.7	6.6	7.1	6.8	7.1
Damage (%)	0.1	0.2	0.2	0.7	0.8	1.0
Foreign Material* (%)	0.0	0.0	0.1	0.1	0.1	0.1
Shrunken/Broken* (%)	0.5	0.4	0.7	0.7	0.5	0.7
Total Defects (%)	0.7	0.6	1.0	1.4	1.4	1.8
Dockage* (%)	0.3	0.3	0.5	0.4	0.4	0.5
Total Screenings (%)	0.8	1.3	1.3	1.2	1.0	1.2
Net Wheat (%)	92.5	92.6	92.2	91.8	92.3	91.7
CTW (%)	110.1	110.3	109.7	109.3	109.8	109.2
MWVI (%)	90.9	90.7	91.2	91.5	91.1	91.6

\*Total Screenings are those factors represented on the grade certificate that are cleaned out in the flour mill. Samples were either official samples collected by a licensee of FGIS or submitted by handlers to a licensee for grading. Desert Durum® cargo data represents information obtained from official export inspection certificates. Test weight conversion from lb/bu to kg/hl according to FGIS-PN-97-5,  $(1.292 \times \text{lb/bu}) + 0.630$ . Net Wheat =  $(100\% - (\text{FM} + \text{SHBN} + \text{Dockage})) \times (100\% - \text{Moisture}) / 100\%$ . Clean, Tempered Wheat (CTW%) =  $(100\% - (\text{FM} + \text{SHBN} + \text{Dockage})) \times (100\% - \text{Moisture}) / (100\% - 16\% (\text{temper moisture}))$ . Millable Wheat Value Index (MWVI) =  $100\% / \text{CTW}$ .

## 2019 DESERT DURUM® AVERAGE GRADE RESULTS BY VARIETY

WHEAT	Alberto	Desert King	Powell	Tiburon	WB Mohave	Westmore HP
Protein (12%mb)	13.4	13.8	13.6	13.7	13.9	15.0
Graded No. 1 (%)	Over 90% of samples graded No.1					
HVAC (%)	96.0	98.0	98.0	98.0	99.0	98.0
Moisture (%)	6.8	7.1	7.7	7.1	6.3	6.8
Test Weight: lb/bu	63.1	61.9	63.9	63.3	63.2	62.1
kg/hl	82.2	80.6	83.2	82.4	82.3	80.9
Damage (%)	1.0	0.0	0.2	0.0	0.0	0.0
Foreign Material (%)	0.0	0.2	0.0	0.0	0.0	0.0
Shrunken/Broken (%)	0.4	0.7	0.5	0.4	0.7	0.7
Total Defects (%)	1.4	0.9	0.7	0.4	0.7	0.7
Dockage (%)	0.2	0.8	0.3	0.1	0.4	0.1

Samples were either official samples collected by a licensee of FGIS or submitted by handlers to a licensee for grading. Test weight conversions from lb/bu to kg/hl according to FGIS-PN97-5,  $(1.292 \times \text{lb/bu}) + 0.630$ .



# 2019 Desert Durum® Crop Quality Report

## Technical and Laboratory Services



*CWC Executive Director Claudia Carter and Laboratory Manager Teng Vang*  
*Photo credit: Matt Salvo, California Farm Bureau Federation*

The California Wheat Commission laboratory has the equipment necessary for evaluation of common and durum wheat milling quality, flour chemical analysis, physical dough testing, semolina analysis, bake and noodle production tests, and pasta analysis.

The Commission's staff is available to work with customers in the area of quality assurance, product development, problem solving, quality control training, and research. The lab order test form is available on the California Wheat Commission website, please use when requesting services.

### Customer Assistance and Support

The Commission is available to answer technical questions about California's wheat quality, including recommendations for blending and appropriate end-use. The Commission conducts specialized training programs in milling, baking, semolina, pasta, and quality control. These specific programs may be customized to meet the customers' needs.

### Crop and Export Survey

California produces five of the six classes of U.S. wheat: Hard Red Winter (HRW), Desert Durum®, Hard White, Soft White and Hard Red Spring. While HRW, Hard White, and Durum are the predominately produced and exported classes, information and contacts for all the above classes of wheat are available by contacting the Commission office. Every effort is made to provide an accurate assessment of quality to buyers. With greater amounts of wheat being sold by variety, varietal specific information is emphasized in Commission surveys.

### Varietal Development

Private and public breeding programs play an important role in the development of new varieties available to California wheat producers. The Commission analyzes hundreds of samples each year to support these programs and encourages the release of new varieties that will meet the customers' needs. New varieties are evaluated by commercial mills through the California Wheat Collaborator program.

### Research

The Commission laboratory is available for flour, semolina, milling, end-product, and new-product research. Technical expertise is available in hearth breads, pasta, Asian food products, standard loaf bread, steamed bread, Asian noodles, cookies, tortillas and Middle Eastern flat breads.



*CWC Laboratory Manager Teng Vang*  
*Photo credit: Matt Salvo, California Farm Bureau Federation*



**California Wheat Commission**  
1240 Commerce Avenue, Suite A  
Woodland, CA 95776-5923

**Phone:** 530.661.1292  
**Fax:** 530.661.1332  
**Web:** californiawheat.org

**Arizona Grain Research and Promotion Council**  
**Arizona Department of Agriculture**  
1688 West Adams Street  
Phoenix, AZ 85007

**Phone:** 602.542.3262  
**Fax:** 602.364.0830